

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF NEBRASKA

VISHAY DALE ELECTRONICS, INC., )

Plaintiff, )

v. )

CYNTEC CO., LTD., SUSUMU CO., )  
LTD., and SUSUMU INTERNATIONAL )  
(USA), INC., )

Defendants. )

8:07CV191

MEMORANDUM AND ORDER

This matter is before the court for claim construction after a hearing pursuant to [\*Markman v. Westview Instruments, Inc.\*, 517 U.S. 370 \(1996\)](#), on December 11, 2008. This is an action for patent infringement under [35 U.S.C. § 271](#) *et seq.* This court has jurisdiction under [28 U.S.C. § 1338\(a\)](#). The plaintiff asserts that defendants infringed the following of its patents: U.S. Patent Nos. 6,204,744 ("the '744 patent"); 6,460,244 ("the '244 patent"); 6,946,944 ("the '944 patent"); 7,034,645 ("the '645 patent"); 7,221,249 ("the '249 patent"); 7,263,761 ("the '761 patent"); and 7,345,562 ("the '562 patent").

**BACKGROUND**

The plaintiff and the defendants are competitors in the market for electronic components known as high current, low profile ("HCLP") inductors. An inductor resists sudden change in electric current, acting like a surge protector to maintain a steady flow of electrons. These inductors are used in a variety of electrical applications, including notebook computers, game boxes, servers, automotive parts and industrial controls.

All of the patents at issue are continuations of an abandoned patent application filed by the plaintiff in 1995. The '744 patent was filed in 1997 and granted in 2001. The

plaintiff has amended the complaint several times to add allegations of infringement of newer patents in the same family.<sup>1</sup> The plaintiff alleges the defendants are infringing on their patents by selling infringing products in the United States. Plaintiff has identified several of the defendants' products that allegedly infringe Claim 10 of the '744 patent and Claim 1 of each of the other patents. See Filing No. [162](#)-2, Plaintiff's Answers to Interrogatories at 2. The plaintiff also claims willful infringement.

All of the patents contain detailed drawings of an embodiment of the claimed invention. See Filing No. [95](#), Amended Complaint, Exs. A-G. The exemplary drawings show an inductor that mounts to the top of a circuit board. See, e.g., *id.*, Ex. A, '744 Patent, Figures ("Figs.") 1-3. The background section of the '744 patent describes prior art inductive components that were composed of a magnetic core of several shapes with conductive wire coils wrapped around them to create the inductor. *Id.*, Ex. A at column ("col.") 1, lines ("ll.") 14-18. The earlier inductors required numerous separate parts and

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<sup>1</sup>The applications filed after the '744 patent were filed as either continuations or divisional applications. A divisional application is defined as:

A later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in the earlier or parent application . . . . Both must be by the same applicant.

While a divisional application may depart from the phraseology used in the parent case there may be no departure therefrom in substance or variation in the disclosure that would amount to "new matter" if introduced by amendment into the parent case.

Manual of Patent Examining Procedure § 201.06. "Continuation" and "divisional" applications are alike in that they are both continuing applications based on the same disclosure as an earlier application. [Transco Prods. Inc. v. Performance Contracting, Inc.](#), 38 F.3d 551, 555 (Fed. Cir. 1994). They differ, however, in what they claim: A "continuation" application claims the same invention claimed in an earlier application, although there may be some variation in the scope of the subject matter claimed, while a "divisional" application is one carved out of an earlier application which disclosed and claimed more than one independent invention, the result being that the divisional application claims only one or more, but not all, of the independent inventions of the earlier application. *Id.*

were surrounded by a shell with air spaces that prevented maximization of space. *Id.*, col. 1, ll. 19-24. The object of the patent is an “improved” inductor with no airspaces, with magnetic material completely surrounding the coil, with a closed magnetic system with a self-shielding capability that would require fewer turns of wire to achieve inductance and would be smaller and less expensive to manufacture. *Id.* at 25-49.

In Claim 10, the ‘744 patent provides that what is claimed is a high current, low profile inductor (“IHLP”) comprising:

- a conductive coil having an inner coil end, an outer coil end, a plurality of coil turns and a hollow core;

- a first conductive lead connected to said inner coil end; a first conductive lead connected to said inner coil end;

- an inductor body substantially free from ferrite materials and comprising powdered iron particles;

- said powdered iron materials completely surrounding and contacting all of said first and second conductive leads, and also completely filling said hollow core;

- said powdered iron material being pressure molded within said hollow core and around said conductive coil and first and second leads so that said powdered iron particles of said inductor body are substantially free from voids therein and are compressed tightly completely around and in contact with said portions of said conductive coil and with said portions of said first and second leads without shorting out said coil or said leads.

*Id.* at col. 6, ll. 26-48. The ‘244, ‘761, and ‘562 patents claim methods for making a high current low profile inductor. *Id.*, Ex. B, the ‘244 Patent at col. 6, ll. 1-3; Ex. F, the ‘761 Patent at col. 5, ll. 4-6; Ex. G, the ‘562 Patent at col. 1, ll. 1-2. The method patent claims use language such as “forming a conductive coil having an inner coil end and an outer coil end” with a “hollow core,” “attaching first and second leads,” “pressure molding,” “powdered magnetic material,” “compressed tightly within and completely around and in contact with

[the coil]” and “create an inductor body.” See *id.*, Ex. B, the ‘244 Patent, col.6, ll. 4-17. Another method claim uses terms such as “forming an inductor element,” “making a dry mixture comprising a dry resin and an insulated dry powdered magnetic powder,” “compressing the dry mixture to create an inductor body,” “without liquifying the dry mixture,” and describes “the inductor body engag[ing] the coil both within the coil open center and also the coil outside surface,” with “at least a pressure of 15 tons per square inch.” Ex. F, col. 5, ll. 5-18. The ‘562 Patent claims a method using terms such as “first and second coil ends,” “powdered conductive material,” “a mixture comprising the powdered conductive particles, the insulation material, and the resin particles,” and claims an inductor body “comprising the compressed mixture while dry of the conductive particles of conductive material.” *Id.*, Ex. G, col. 5, ll. 2-16.

The ‘944, ‘249, and ‘645 patents involve an inductor coil and methods for making it. *Id.*, Ex. C, the ‘944 Patent; Ex. D., the ‘645 Patent; Ex. E, the ‘249 Patent. Those patents use some of the same language set out above, including “compressing without liquifying” and “inductor body,” and also use the phrases “causing the conductive particles to shield the coil,” “making a mixture,” “making a dry mixture,” “an insulated dry powdered magnetic material,” and “an electrically insulated non-ferrite powdered material.” *Id.*, Ex. C, the ‘944 Patent, col. 6, ll. 10-11; Ex. D, the ‘645 Patent, col. 6, ll. 19-21; Ex. E, the ‘249 Patent, col. 5, ll. 20-25.

In the context of those claims, the parties propose the following constructions:

**1. “shield the coil” (appearing in Claim 1 of the ‘249 patent)**

The parties have agreed to the construction of the term “shield the coil” as “using magnetically conductive particles to prevent the majority of magnetic flux from leaving the inductor body.”

**2. “coil end” / “inner coil end” / “outer coil end”(appearing in Claim 10 of the ‘744 patent and Claim 1 of the ‘244, ‘249, 761, and ‘562 patents)**

Defendants propose that “coil end” should be construed as “a tip of the coil,” that “inner coil end” should be construed to mean “a tip of the coil that extends from the interior surface of the coil, and not from the exterior surface of the coil,” and that “outer coil end” should be construed as “a tip of the coil that extends from the exterior surface of the coil, and not from the interior surface of the coil.” The plaintiff contends that the terms need no construction and that the ordinary and customary meaning of the language should control. Should the court find construction necessary, plaintiff proposes these alternative constructions: “inner coil end: the end of the coil that extends from an inner coil turn” and “outer coil end: the end of the coil that extends from an outer coil turn.”

**3. “conductive lead connected to [inner/outer] coil end” (appearing in Claim 10 of the ‘744 patent)**

Defendants propose that the term should be construed to mean “a conductive lead that is distinct from the coil end and is attached to the coil end.” The plaintiff argues that no construction is necessary, but contends that to the extent the court finds a construction is necessary, the term should be construed as “a conductor that conducts an electrical current from an [inner/outer] coil end to an electrical circuit.”

**4. “inductor body” (appearing in Claim 10 of the ‘744 patent and in Claim 1 of each of the other patents at issue)**

Defendants propose that the term “inductor body” should be construed to mean: “a unitary construction from compressed individual particles and not from pre-formed

bodies (e.g., core halves).” Plaintiff argues that no construction is necessary, but proposes the following language if the court finds further construction would be helpful to the jury: “the unitized resultant of compressing magnetic powdered material about the turns of the coil.”

**5. “thoroughly mixed together” (appearing in Claim 1 of the ‘249 patent)**

Defendants propose the construction: “evenly distributed by combining or blending into one mass or mixture, rendering the constituent parts indistinguishable.” Plaintiff contends that no construction is required.

**6. “compressing . . . without liquifying the resin” (appearing in Claim 1 of the ‘944 patent; Claim 1 of the ‘645 patent; and Claim 1 of the ‘761 patent)**

Defendants propose that the term be interpreted to mean “applying pressure without changing any resin from a dry state to a liquid state.” Plaintiff again contends that no construction is necessary.

**7. “at least a pressure of” (appearing in Claim 1 of the ‘761 patent)**

Defendants propose “a minimum pressure as measured on opposed surfaces of the inductor body” and plaintiff proposes “an average pressure as measured on opposed surfaces of the inductor body.”

**8. “powdered” (appearing in all claims)**

Defendants argue that “powdered” should be construed to mean “individual granular particles capable of being poured into a mold (e.g., Ancorsteel 1000C).” They argue that this definition is necessary to make it clear that the patents distinguish the use of a pre-formed body (i.e., core halves). Plaintiff contends that no construction is necessary, but

proposes “a dry material in a selected range of particle sizes,” should the court find further explanation necessary.

9. **“powdered iron particles . . . compressed tightly around and in contact with all portions of said conductive coil” and “powdered magnetic material . . . completely around said coil [and] compressed tightly around and in contact with said conductive coil” (appearing in Claim 10 of the ‘744 patent; and Claim 1 of the ‘244 patent)**

The defendants propose that the terms be construed as: “Powdered iron particles that are pressed into and physically touching the entire length of the coil from inner coil end to outer coil end” and “powdered magnetic material that is pressed into and physically touching the entire length of the coil from inner coil end to outer coil end.” Again, plaintiff contends that no construction is necessary.

10. **“substantially free from ferrite” and “non-ferrite” (Claim 10 of the ‘744 patent; Claim 1 of the ‘944 and ‘645 patents)**

The plaintiff seeks construction of these terms. It contends that “substantially free from ferrite” should be interpreted to mean “substantially free from magnetic materials composed of oxides containing ferric ions as the main constituent” and that the court should interpret the phrase “non-ferrite powdered magnetic material” to mean: “a powdered magnetic material free from magnetic materials composed of oxides containing ferric ions as the main constituent.” Defendants contend that these terms are indefinite because there is no basis to determine the meaning of the words in the patents themselves.<sup>2</sup> They argue that there is no single plain and ordinary meaning for the term “ferrite” and that one skilled in the art would not understand the scope of the claims.

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<sup>2</sup>Defendants also contend that the term “ferrite” is not even used in the patents and is never identified as something to be avoided. They assert that the lack of any disclosure of “non-ferrite” or “substantially free from ferrite” in the patent specifications render these claims invalid under [35 U.S.C. § 112](#) for lack of written description.

**11. “inductor body comprising the compressed mixture while dry of the conductive particles of conductive material” (Claim 1 of the ‘562 and ‘249 patents)**

The parties agree that the phrase is worded awkwardly. Defendants assert that the phrase contains a grammatical error that makes it impossible to determine the meaning of the phrase. Plaintiff contends that the meaning of the phrase is clear in the context of the patents and that the phrase can more clearly be expressed as “the compressed mixture of the dry conductive particles.”

In support of their respective positions, the parties have each submitted evidence. See Filing Nos. 156, 158, 165, and 167, Indices of Evidence (“Evid.”). Defendants submit portions of the prosecution histories of some of the plaintiff’s patents, as well as a Japanese patent issued in 1992 (“the Seto patent”), and several dictionary definitions and textbook references. Filing No. [156](#), Defendants’ Index of Evid., Exhibits (“Exs.”). K - W, Y; Filing No. [165](#), Defendants’ Supplemental Index of Evid., Exs. A-D. The evidence submitted by defendants shows that the patent examiner initially rejected certain claims in one of plaintiff’s later applications based on the prior art of the Seto patent. Filing No. [156](#), Defendants’ Index of Evidence, Ex. M, Amendment to Patent Application dated August 7, 2003 at 8. Plaintiff’s response to the rejection stated that its claimed invention differed from the prior art method disclosed in the Seto patent in two respects: the Seto invention “utilizes ferrite and makes no suggestion of the use of iron particles as required by the claim” and the Seto patent discloses the manufacture of a first mold half and a second mold half. *Id.* Defendants have also offered an English translation of the Seto patent that was submitted by plaintiff to the patent examiner as part of the prosecution history. *Id.*, Ex. O at 16-23.



The plaintiff similarly submits dictionary and textbook references. Filing No. [158](#), Plaintiff's Index of Evid., Exs.1-7; Filing No. [167](#), Plaintiff's Supplemental Index of Evidence, Exs. 11- 13. Plaintiff also submits the declaration of Professor Jay P. Kesan, M.S., Ph.D., J.D., an electrical engineer. Filing No. [158](#), Plaintiff's Index of Evid., Ex. 8, Declaration of Jay P Kesan ("Kasan Decl."). In his declaration, Dr. Kesan states that, to a person of ordinary skill in the art that pertains to the invention of the '744 patent, the term "ferrite" means "magnetic materials composed of oxides containing ferric ions as their main constituent." *Id.*, Kasan Decl. at 3. Thus, a non-ferrite powdered magnetic material would be defined as "substantially free from magnetic materials composed of oxides containing ferric ions as their main constituent." *Id.* In addition, Dr. Kesan states that a person of ordinary skill in the art "would know that the powdered magnetic materials would be substantially free from ferrite because of the examples of non-ferrites in the '744 specification" and because of "the performance of the inductors." *Id.* at 3. A person of ordinary skill in the art would have the same understanding with reference to the term "non-ferrite mixture" in Claim 1 of the '944 and '645 patents. *Id.* at 4.

## DISCUSSION

### 1. Law

Claim construction is an issue of law, [Markman v. Westview Instruments, Inc.](#), 52 F.3d 967, 970-71 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). The court determines the ordinary and customary meaning of undefined claim terms as understood by a person of ordinary skill in the art at the time of the invention, using the methodology in [Phillips v. AWH Corp.](#), 415 F.3d 1303, 1312-19 (Fed. Cir. 2005) (*en banc*). The focus of the *Markman* inquiry is to ascertain the meaning of a technical or scientific term, or "term

of art.” *Markman*, 52 F.3d at 976, 981. “[T]he court looks to those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.” *Phillips*, 415 F.3d at 1314 (internal quotation marks and citations omitted). Those sources include the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. *Id.*

The claims of a patent define the invention that the patentee is entitled to exclude others from making. *Id.* Courts first look to the words of the claims themselves to define the scope of the patented invention. *Id.* The claims themselves provide substantial guidance as to the meaning of particular claim terms, quite apart from the written description and the prosecution history. *Id.* The words of a claim are generally given the ordinary and customary meaning they would have to one of ordinary skill in the art. *Id.* at 1312, 1321 (stating “[p]roperly viewed, the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.”). Other claims of the patent can also be valuable sources of enlightenment as to the meaning of a claim term, as can differences among claims. *Id.* at 1312. A court does not interpret claim terms in a vacuum, devoid of the context of the claim as a whole. [\*Kyocera Wireless Corp. v. International Trade Comm'n\*, 545 F.3d 1340, 1347 \(Fed. Cir. 2008\)](#) (noting that proper claim construction demands interpretation of the entire claim in context, not a single element in isolation).

The court is guided in its endeavor by several “canons of construction” or guideposts. [\*Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.\*, 246 F.3d 1368, 1376 \(Fed. Cir. 2001\)](#). Under the doctrine of claim differentiation, a dependent claim has a narrower scope than the claim from which it depends and an independent claim has a broader scope

than the claim that depends from it. [\*Free Motion Fitness, Inc. v. Cybex Int'l, Inc.\*, 423 F.3d 1343, 1351 \(Fed. Cir. 2005\)](#). Also, ordinarily, claims are not limited to the preferred embodiments disclosed in the specification. *Phillips*, 415 F.3d at 1323. Different words in a patent have different meanings and the same words have the same meaning. [\*Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.\*, 381 F.3d 1111, 1119-20 \(Fed. Cir. 2004\)](#). Use of the open-ended term of art, "comprising," allows the addition of other elements so long as the named elements, which are essential, are included. See [\*Genentech, Inc. v. Chiron Corp.\*, 112 F.3d 495, 501 \(Fed. Cir. 1997\)](#). When a document is "incorporated by reference" into a host document, such as a patent, the referenced document becomes effectively part of the host document as if it were explicitly contained therein. [\*Telemac Cellular Corp. v. Topp Telecom, Inc.\*, 247 F.3d 1316, 1329 \(Fed. Cir. 2001\)](#).

Because the claims do not stand alone, but are part of a fully integrated written instrument, the specification is usually the best guide to the meaning of a disputed term. *Phillips*, 415 F.3d at 1315. The specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess; in such cases, the inventor's lexicography governs. *Id.* "When the specification explains and defines a term used in the claims, without ambiguity or incompleteness, there is no need to search further for the meaning of the term." [\*Multiform Desiccants, Inc. v. Medzam Ltd.\*, 133 F.3d 1473, 1478 \(Fed. Cir. 1998\)](#).

When looking at a specification in the patent, the court adheres to two axioms. [\*Liebel-Flarsheim Co. v. Medrad, Inc.\*, 358 F.3d 898, 904 \(Fed. Cir. 2004\)](#). "On the one hand, claims 'must be read in view of the specification, of which they are a part.'" *Id.*

(quoting *Markman*, 52 F.3d at 976, *aff'd*, 517 U.S. 370 (1996)). On the other hand, a court may not read a limitation from the specification into the claims. [\*Innovad Inc. v. Microsoft Corp.\*, 260 F.3d 1326, 1332 \(Fed. Cir. 2001\)](#) (noting that the “interpretative process forbids importing limitations from the specification into the defining language of the claims.”).

The patent’s prosecution history, if it is in evidence, should also be considered, second in importance to the patent’s specification. *Phillips*, 415 F.3d at 1317. However, the prosecution history sometimes lacks the clarity of the specification regarding the meaning of the claim terms, thus making it less useful for claim construction purposes. See [\*Netcraft Corp. v. eBay, Inc.\*, — F.3d —, 2008 WL 5137114, \\*8 \(Fed. Cir. Dec. 9, 2008\)](#); *Phillips*, 415 F.3d at 1317 (“[B]ecause the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.”).

Although intrinsic evidence is preferred, courts are also authorized to rely on extrinsic evidence “which consists of all evidence external to the patent and prosecution history including expert and inventor testimony, dictionaries and learned treatises.” [\*Id.\*](#) (noting that “extrinsic evidence is less significant than the intrinsic record in determining the ‘legally operative meaning of claim language.’”). “In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, at 1314. If possible, claims should be construed so as to preserve the claim’s validity, but that maxim is limited “to cases in which ‘the court concludes, after applying all the available tools of

claim construction, that the claim is still ambiguous.” *Phillips*, 415 F.3d at 1327 (*quoting Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d at 911).

## **2. Claim Construction**

The court has carefully reviewed the patents and the evidence submitted by the parties. The court’s claim construction is generally guided by the language of the claims in the context of the other claims of the patents, the patent specifications, and patents incorporated within the patents. Because, for the most part, the intrinsic evidence of record provides a sufficient foundation for the court’s claim construction, the court resorts to extrinsic evidence only to discern the meaning of the terms “substantially free of ferrite” and “non-ferrite” to a person skilled in the art.

The court agrees with the plaintiff’s contention that no construction of the other terms at issue is necessary. The meaning of the claim language is relatively clear in the context of the patents as a whole. The disputed language does not contain technical or scientific terms of art, but rather involves the application of the widely accepted meaning of commonly understood words such as “mixture,” “compressed,” “pressure” and “powdered.” The meaning of the language is clear in the context of the drawings and specifications of the patents. The drawings of the patents illustrate the inner and outer coil ends. It is clear that the function of the HDLP inductor is to achieve the same inductance as a larger, prior art inductor in a smaller, less expensive inductor. The specification of the ‘744 patent contains a detailed description of the preferred embodiment, also illustrated in the drawings. Importantly, the patents’ specifications list several examples of powdered irons to use in the mixture and also describes the performance parameters of the invention.

The court finds no support for the defendants' proposed constructions in the language of either the claims or the specifications of the patents. Moreover, the defendants have not offered expert testimony that one of ordinary skill in the art would be unable to understand the disputed claims in the context of the patents as a whole.

Plaintiff, on the other hand, has shown, that the word "ferrite" is a term of art, with a specific meaning to persons skilled in the art of electrical and computer engineering. In the patent, the term is used in reference to materials used to create the inductor body, and the term should be construed in that context. The term "ferrite" is recognized in the field of inductors to mean "a ceramic iron oxide material commonly used in inductor cores." Kesan Decl. at 3. Dictionary definitions submitted by both parties are consistent with the plaintiff's interpretation. See, e.g., Filing No. [165](#), Ex. C; Filing No. [156](#), Exs. Q, R. Defendants have not propounded any expert evidence in support of their contention that a person reasonably skilled in the art could not understand the scope of the patent claims because the references to ferrite are indefinite. The court finds the defendants' arguments are directed more at invalidity than to claim construction.

With respect to the admittedly awkward phrase, "inductor body comprising the compressed mixture while dry of the conductive particles of conductive material," the court finds it clear from the context of the patent as a whole that the language should read "the compressed mixture of the dry conductive particles." Accordingly,

IT IS ORDERED that the court adopts the following claim constructions:

**Shield the coil:** "using magnetically conductive particles to prevent the majority of magnetic flux from leaving the inductor body."

**Substantially free from ferrite:** “substantially free from magnetic materials composed of oxides containing ferric ions as the main constituent.”

**Non-ferrite powdered magnetic material:** “a powdered magnetic material free from magnetic materials composed of oxides containing ferric ions as the main constituent.”

**Inductor body comprising the compressed mixture while dry of the conductive particles of conductive material:** “the compressed mixture of the dry conductive particles.”

Dated this 23<sup>rd</sup> day of December, 2008.

BY THE COURT:

s/ Joseph F. Bataillon  
Chief United States District Judge